

a vendor-supplied driver executed on a PC that intercepts file system delete calls and then generates an overwrite array that is used to overwrite the file. After overwriting the physical disk locations corresponding to the file, the vendor-supplied driver passes the original file system delete call down the file system layers (see Figure 4, reference number 48 of Starek). Therefore, to intercept a file system delete call and then forward the delete call down the file system layers, the vendor-supplied driver must reside on the host computer.

Thus, if the vendor-supplied driver were to be executed on the file array adapter and not the host computer as suggested in the Office Action, the vendor supplied driver would not be able to intercept file system delete calls and then forward such calls down the file system layers.

The Claims Patentably Distinguish Over the Combination

Assuming, *arguendo*, that the combination of Napolitano and Starek were proper, Applicants' claims still patentably distinguish over the combination.

Claim 1

Claim 1 is directed to a storage system for use in a computer system including a host computer. The storage system comprises at least one storage device having a plurality of user-accessible storage locations, the at least one storage device including at least one disk drive; a cache memory; and a controller, coupled to the cache memory and the at least one storage device, that controls access to the at least one storage device from the host computer, the controller being capable of generating data that is independent of any data passed from the host computer to the storage system and writing the generated data to at least two non-contiguous user-accessible storage locations on the at least one storage device in response to a communication from the host computer that does not include the generated data to be written to the at least two non-contiguous user-accessible storage locations, without writing the generated data to at least one user-accessible storage location disposed between the at least two non-contiguous storage locations so that any data in the at least one user-accessible storage location is preserved.

Neither Napolitano nor Starek, taken alone or in combination, discloses or suggests a controller in a storage system that is “capable of generating data that is independent of any data passed from the host computer to the storage system.” If one skilled in the art were to follow the teachings of Starek and Napolitano, the resulting system would include the vendor-supplied driver of Starek being added in the host computer of Napolitano. There is simply no teaching or suggestion to move the vendor-supplied drive into a storage system. In addition, as discussed above, the vendor-supplied driver would not function if located in the file array adapter (i.e., the storage system) of Napolitano, because it would not be able to intercept file system delete calls and then pass those calls down the layers of the file system. Because the vendor-supplied driver would be located on the host, the overwrite arrays generated by the vendor-supplied driver would be passed from the host computer to the file array adapter. Therefore, the storage system would not include a controller capable of generating data, as required by claim 1.

Further, neither Napolitano nor Starek, taken alone or in combination, discloses or suggests “writing the generated data to at least two non-contiguous user-accessible storage locations on the at least one storage device in response to a communication from the host computer.” It should be understood that claim 1 does not require writing all of the generated data in response to a single communication from the host, as claim 1 contemplates a situation where multiple communications (i.e., any number) may be used to write the generated data, with only one of those communications relating to data written to at least two non-contiguous storage locations. Starek merely discloses overwriting a file. Nowhere does Starek disclose or suggest that the file, or any two non-contiguous locations within it, is overwritten in response to a single I/O command. The manner in which a file with blocks stored in non-contiguous locations is typically overwritten is with the use of a plurality of different write commands issued to the drive, with each write command writing data to only contiguous locations. Starek certainly does not disclose or suggest anything different, such as the use of a single command that writes data to two or more non-contiguous locations. Applicants traverse any assertion that prior art exists that would suggest modifying Napolitano or Starek to write to two or more non-contiguous locations based on a single command.

In view of the foregoing, claim 1 patentably distinguishes over the combination of Napolitano and Starek. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

Claims 2-11 and 22-24 depend from claim 1 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 2-11 and 22-24 under 35 U.S.C. §103(a) be withdrawn.

Claim 12

Claim 12 is directed to a method of operating a storage system in a computer system including the storage system and a host computer coupled thereto, wherein the storage system includes a cache memory and at least one storage device having a plurality of user-accessible storage locations, the at least one storage device including at least one disk drive. The method comprises, in response to a communication received from the host computer, acts of: (A) generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to at least two non-contiguous user-accessible storage locations of the plurality of user-accessible storage locations on the at least one storage device; and (B) writing the generated data to the at least two non-contiguous user-accessible storage locations without writing the generated data to at least one user-accessible storage location disposed between the at least two non-contiguous storage locations so that any data in the at least one user-accessible storage location is preserved.

As should be clear from the discussion above, neither Napolitano nor Starek, taken alone or in combination, discloses or suggests “generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to at least two non-contiguous user-accessible storage locations of the plurality of user-accessible storage locations on the at least one storage device.” Therefore, claim 12 patentably distinguishes over the combination of Starek and Napolitano. Accordingly, it is respectfully requested that the rejection of claim 12 under 35 U.S.C. §103(a) be withdrawn.

Claims 13-20, 25, and-26 depend from claim 12 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 13-20, 25, and 26 under 35 U.S.C. §103(a) be withdrawn.

Claim 21

Claim 21 is directed to a method of writing information to a logical object of the host computer in a computer system including a storage system and a host computer coupled thereto, the storage system including a cache memory and at least one storage device. The method comprises, in response to a communication received from the host computer, acts of: (A) generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to a plurality of storage locations on the at least one storage device corresponding to the logical object of the host computer; and (B) writing the generated data to only the plurality of storage locations corresponding to the logical object.

As should be clear from the discussion above, neither Napolitano nor Starek, taken alone or in combination discloses or suggests “generating, within the storage system, data that is independent of any data passed from the host computer to the storage system to be written to a plurality of storage locations on the at least one storage device corresponding to the logical object of the host computer.” Therefore, claim 21 patentably distinguishes over the combination of Starek and Napolitano. Accordingly, it is respectfully requested that the rejection of claim 21 under 35 U.S.C. §103(a) be withdrawn.

Claim 27 depends from claim 21 and is patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claim 27 under 35 U.S.C. §103(a) be withdrawn.

Claim 28

Claim 28 is directed to a method of writing information to a logical object of the host computer in a computer system including a storage system and a host computer coupled thereto, the storage system including at least one storage device having a plurality of storage

locations. The method comprises acts of: mapping the logical object to at least one storage location of the plurality of storage locations on the at least one storage device that is assigned to store the information for the logical object; receiving, at the storage system, a communication from the host computer identifying the at least one storage location; and generating, within the storage system, data that is independent of any data passed from the host computer to the storage system and writing the generated data to the at least one storage location in response to the act of receiving the communication.

As should be clear from the discussion above, neither Napolitano nor Starek, taken alone or in combination, discloses or suggests “generating, within the storage system, data that is independent of any data passed from the host computer to the storage system and writing the generated data to the at least one storage location.” Therefore, claim 28 patentably distinguishes over the combination of Napolitano and Starek. Wong does not cure this infirmity of Napolitano and Starek, as Wong is completely unrelated to generating data on a storage system and writing such data to a storage system. Accordingly, it is respectfully requested that the rejection of claim 28 under 35 U.S.C. §103(a) be withdrawn.

Claims 29, 30, and 32-49 depend from claim 28 and are patentable for at least the same reasons. Accordingly, it is respectfully requested that the rejection of claims 29, 30, and 32-49 under 35 U.S.C. §103(a) be withdrawn.